

CLAIMS

We claim:

- 204/403.01
- 5
1. A tissue collection device comprising an electrode.
 2. A tissue collection device according to claim 1 wherein said electrode comprises a capture binding ligand.
 3. A tissue collection device according to claim 1 wherein said capture binding ligand is a nucleic acid.
 4. A tissue collection device according to claim 1 wherein said electrode comprises:
 - a) a self-assembled monolayer; and
 - b) a capture binding ligand.
 - 10 5. A tissue collection device according to claim 4 wherein said capture binding ligand is a nucleic acid capture probe.
 6. A tissue collection device according to claim 4 wherein said self-assembled monolayer comprises insulators.
 - 15 7. A tissue collection device according to claim 4 wherein said self-assembled monolayer comprises an electroconduit-forming species (EFS).
 8. A tissue collection device according to claim 5 wherein said EFS is a conductive oligomer.
 9. A tissue collection device according to claim 4 further comprising at least one reagent.
 10. A tissue collection device according to claim 9 wherein said reagent is selected from the group consisting of anticoagulants, probe nucleic acids, and lysis reagent.
 - 20 11. A tissue collection device according to claim 10 wherein said probe nucleic acid comprises an electron transfer moiety.
 12. A tissue collection device according to claim 11 wherein said electron transfer moiety is ferrocene.
 13. A tissue collection device according to claim 4 that is a blood collection device.
 - 25 14. A tissue collection device according to claim 4 wherein said electrode is on a substrate comprising printed circuit board (PCB) material.

15. A method of detecting a target analyte is a sample comprising:

a) applying an initiation signal to a tissue collection device comprising an electrode comprising:

i) a self-assembled monolayer;

ii) an assay complex comprising:

1) a capture binding ligand;

2) said target analyte; and

3) an electron transfer moiety; and

b) detecting electron transfer between said electrode and said electron transfer moiety.

16. A method according to claim 15 wherein said sample is blood.

17. A method according to claim 15 wherein said self-assembled monolayer comprises insulators.

18. A method according to claim 15 wherein said self-assembled monolayer comprises an EFS.

19. A method according to claim 15 wherein said target analyte is nucleic acid.

20. A method according to claim 15 wherein said capture binding ligand is a capture probe.

21. A method according to claim 15 wherein said assay complex comprises a label probe comprising said electron transfer moiety.

22. A method according to claim 15 wherein said electron transfer moiety is ferrocene.